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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/933,408	08/20/2001	Kenneth P. Kehrer	A148 1560	5728

7590 07/15/2003

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EXAMINER

HALPERN, MARK

ART UNIT

PAPER NUMBER

1731

DATE MAILED: 07/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/933,408

Applicant(s)

KEHRER ET AL.

Examiner

Mark Halpern

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 and 44-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17, 45, 46 is/are rejected.
- 7) ☒ Claim(s) 44 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1) Acknowledgement is made of Amendment received 4/28/2003. Applicants amend claims 1-7, 9-11, 13-17, cancel claims 18-43, and offer new claims 44-46, for consideration.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2) Claims 1-3, 8-16, 46, are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (5,338,406).

Claims 1, 8: Smith discloses a polyelectrolyte complex that when incorporated into an aqueous suspension of cellulosic fibers would improve the strength of the paper formed. The polyelectrolyte complex includes an anionic polymer and a cationic polymer. The anionic polymer charge density is less than 5 meq/gram. The cationic polymer charge density is 0.2 to 4 meq/gram (Abstract, and col. 1, lines 4-15). It would have been obvious, to one skilled in the art at the time the invention was made, that the cationic polymer charge of present "about 6... meq/gram" be construed on 4 meq/gram of Smith. See MPEP 2173.05 (b) regarding the interpretation of the term "about".

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Claims 2-3, 13: the ratio of polyanion group to polycation group is disclosed as from 100:4 to 1:40 (col. 6, lines 29-33).

Claims 9-10: polysaccharides (col. 4, line 48), and a starch (col. 8, line 18) are disclosed.

Claim 11: sizes, defoamers, wetting agents inorganic fillers are disclosed (col. 8, lines 31-33).

Claims 12, 46: quaternary amine modified waxy maize starch is disclosed (col. 8, lines 17-18).

Claim 14: the anionic polymer is sodium methacrylate (col. 5, lines 4-39).

Claims 15-16: the cationic polymer is diallyldimethylammonium chloride (DADMAC) (col. 4, lines 42-59).

3) Claims 4-7, 17, 45, are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith in view of Economou (3,660,338).

Claims 4-7: Smith is applied as above for claim 1, Smith fails to disclose the molecular weight of the anionic and cationic polymers, and that the anionic polymer has a crosslinked density of up to 1 per 50 units. Economou discloses an amphoteric strengthening agent for paper that is a self-crosslinked composition of a polyanionic polymer and a polycationic polymer. The molecular weight of the polymers is in excess of 50,000. The crosslinking of the anionic polymers is 90:10 of acrylamide to acrylic acid (col. 2, lines 43-68, col. 5, lines 25-30, and col. 5, lines 65-72). It would have been obvious, to one skilled in the art at the time the invention was made, to combine

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the teachings of Smith and Economou, because such a combination would expand the range of strengthening additives in the design of Smith.

Claims 17, 45: anionic polymers are weakly acidic (Economou, col. 5, lines 25-30).

Allowable Subject Matter

4) Claim 44 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for indication of allowable subject matter is that the cited prior art does not show a polymer binder for a fibrous sheet containing a polycation is of a positive charge between 6 to about 12 meq/gram.

Response to Amendment

5) Claims 2-3, 6, rejection under 35 U.S.C. 112, second paragraph, is withdrawn in view of amended claims.

6) Claim 10 objection is withdrawn in view of amended claim.

7) Applicants' arguments filed 4/28/2003, have been fully considered but they are not persuasive.

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In regard to independent claim 1, Applicants allege that the cited prior art, Smith, discloses a cationic charge density in the range 0.2 to 4 meq/gram, while the present invention discloses a cationic polymer charge density in the range of about 6 to about 12 meq/gram, that the Applicants range is beyond the range described by Smith, and that the term "about" should be narrowly interpreted so as to provide for at most a 0.5% variance at both the upper and lower ends of the range.

Examiner responds as follows. The claim, as recited, is interpreted to read on the range of Smith, which discloses a cationic polymer charge density in the range of 0.2 to 4 meq/gram. The claimed range of cationic polymer charge density range is flexible and the low end of range of "about 6 meq/gram" is being construed on "4 meq/gram" of Smith, in view that there is nothing in the specification to provide any indication as to what range of specific density is covered by the term "about". See MPEP 2173.05(b). Note: A positive charge of between 6 to about 12 meq/gram is indicated as allowable subject matter, as per item 4, above.

Conclusion

8) Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Halpern whose telephone number is 703-305-4522. The examiner can normally be reached on Mon-Fri, (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 703-308-1164. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7718 for regular communications and 703-305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0651.

MH

Mark Halpern
Patent Examiner
Art Unit 1731

July 10, 2003


STEVEN P. GRIFFIN
SUPERVISORY PATENT EXAMINER
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